# ANNUAL REPORT OF THE BUREAU OF COMMERCIAL FISHERIES BIOLOGICAL LABORATORY, GALVESTON, TEXAS

## FISCAL YEAR 1965


UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

BUREAU OF COMMERCIAL FISHERIES

Circular 246

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| Raphael R. Proctor, Jr. | Chemist | Do. |
| Larence M. Lansford | Technician | Do. |
| James Wallett | Technician | Do. |
| Albert L. Kudelka | Summer Trainee | Do. |

### Library

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| Stella Breedlove | Librarian | Galveston |
| Shirley J. Chatmon | Summer Trainee | Do. |

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| Petronila C. Prado | Clerk-Stenographer | Do. |
| Elizabeth C. Kilian | Clerk-Stenographer | Do. |
| Laura M. Hermann | Museum Technician (Nat. Sci.) | Do. |
| Daniel Patlan | Office Draftsman | Do. |
| Margie L. Watson | Clerk-Stenographer (resigned 4/65) | Do. |

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| Glo S. Baxter | Administrative Clerk | Do. |
| Corinna L. Denbo | Purchasing Agent | Do. |
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| William D. Muir | Summer Trainee | Do. |

## SHRIMP BIOLOGY PROGRAM

Research of the Shrimp Biology Program is designed to provide an understanding of the life history of commercially important shrimp. Sound management practices can then be established to ensure full utilization of this valuable resource.

During fiscal year 1965, research cruises were made in the waters over the northwestern Continental Shelf of the Gulf of Mexico between the Mississippi River and Brownsville, Tex. Each month, biological and hydrological measurements were obtained at 41 stations, ranging in depths from 4 to 60 fath. At each station, sampling procedure entailed making a 20-min. plankton haul with a Gulf-V plankton sampler and obtaining temperature and salinity measurements at various depths. One-hr. tows with a 45-ft. shrimp trawl were made at selected stations, and drift bottles were released during several months. We also made shorter cruises to obtain gravid shrimp for experimental rearing of the larvae and to measure water currents (fig. 1).

One of our major problems has been to identify larval shrimp in plankton samples; therefore, we have spent considerable effort in attempting to rear shrimp of known parentage and accurately describing each stage. During this past year, we made a major advancement when brown shrimp (Penaeus aztecus), pink shrimp (P. duorarum), and Trachypeneus similis were successfully reared to postlarvae. Further advancement was made toward developing a mass culture technique for shrimp. Two species of penaeid shrimp were reared in mass culture, to which, in addition to food, the only additive was disodium salt of the metal chelator E.D.T.A. (ethylenediaminetetraacetic).

In conjunction with the study of plankton-stage abundance and distribution, we continued investigating the possibility that postlarvae of the Penaeus species concentrate on the bottom before they move into nursery areas. By modifying a Clarke-Bumpus sampler[7] and mounting it on a sled, we were able to collect plankton samples within 5 to 6 in. of the bottom. Our search for postlarval Penaeus, however, was unsuccessful. Analysis of regularly collected plankton samples continued, and 2 yr. of comparable data are now available.

[7] Trade names are used in this report for identification only. Their appearance does not imply endorsement by the Bureau of Commercial Fisheries.



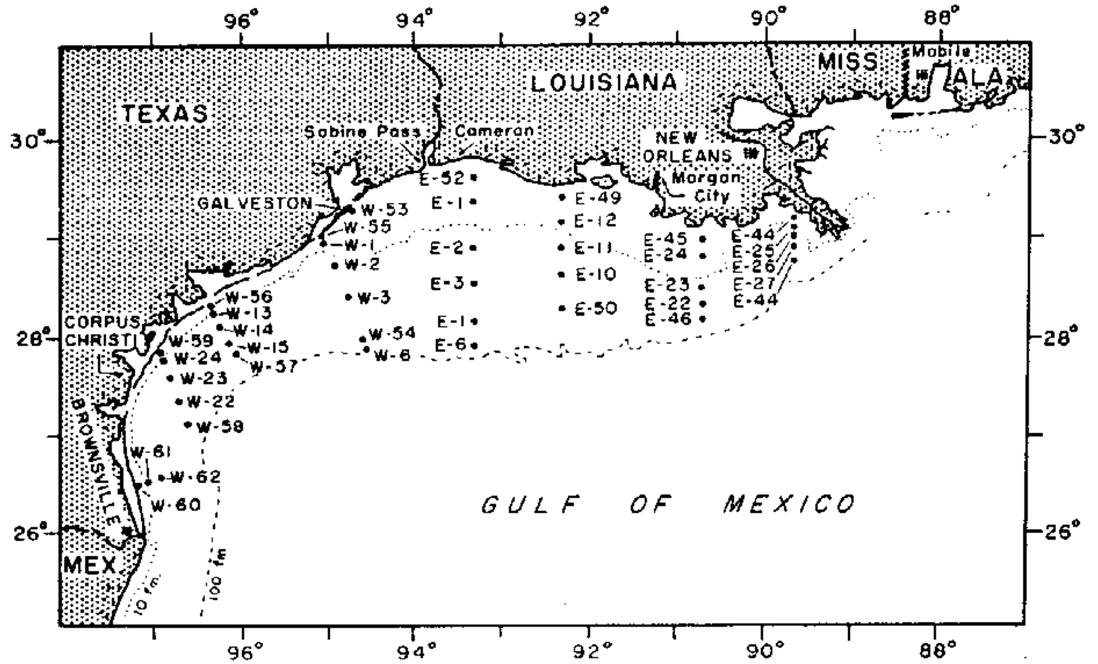


Figure 1.--Offshore station pattern for operations of the Shrimp Biology Program.

Monthly isohaline and isothermal charts were drawn from the temperature and salinity data collected concurrently with biological samples. In addition, we made several 24-hr. current studies in an effort to evaluate the role of water currents in the inshore transport of larval shrimp.

The examination of fish samples collected for the Industrial Fish Program has been completed, providing 3 yr. of data. These data are being analyzed to determine seasonal distribution and abundance of many fish species; particular emphasis is directed toward investigating the possibility of co-occurrence of fish and shrimp populations.

A new project, "Cultivation of Shrimp in Artificial Ponds," began in December 1964. Although success has varied in our first attempts to rear shrimp in manmade ponds, the resulting information should enable us to assess the factors that affect growth and survival of shrimp reared under seminatural conditions.

At our Miami Field Station, personnel have been engaged in another relatively new phase of research designed to study the ecology of juvenile pink shrimp in Florida Bay. Considerable effort was spent in developing a suction dredge that would quantitatively sample shrimp and other fauna. Systematic sampling is now in progress.

Robert F. Temple, Program Leader

## OCEANOGRAPHIC OBSERVATIONS ON THE CONTINENTAL SHELF OF THE NORTHWESTERN GULF OF MEXICO

With the continuation of this project in fiscal year 1965, physical oceanographic measurements and meteorological observations were made monthly at 41 stations over the Continental Shelf of the northwestern Gulf of Mexico (fig. 1). About 700 bathythermograph slides and 2,000 water samples have been processed during the year, and the resulting data analyzed and filed.

### Surface Salinities

The distribution of surface salinities varied slightly during January to March 1964. Isohalines paralleled the Louisiana and Texas coasts and ranged from 30.0 p.p.t. (parts per thousand) along the shoreline to 36.0 p.p.t. out to the 10-fath. contour. Beyond this point, salinities were close to 36.5 p.p.t. Deviations from this general distribution were evident in February when two intrusions of water in excess of 36.8 p.p.t. extended onto the Continental Shelf areas of Texas and Louisiana. Remnants of these intrusions were represented in March by two isolated, high-salinity water masses in about the same areas as the February intrusions.

Surface salinities changed markedly with increased river discharge in April and June.